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FORMULATION AND EVALUATION OF DICLOFENAC SODIUM MATRIX TABLET BY USING *VIGNA MUNGO* SEEDS GUM AS A NOVEL MATRIX FORMING AGENT

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ABSTRACT

The aim of present study was to prepare matrix tablet of diclofenac sodium by using *vigna mungo* seed gum as a natural polymer. The *vigna mungo* seed gum which was previously extracted, isolated from *vigna mungo* seeds and it was exposed to various phytochemical characterizations. The matrix tablet of diclofenac sodium was prepared by direct compression along with the various excipients like HPMC, VMSG, starch, magnesium stearate and talc. Five batches of formulation were prepared by direct compression along with various evaluation parameter such as thickness, hardness, weight variation, friability, drug content and in vitro dissolution study. By studying all the evaluation parameter it was found that batch F2 is optimized batch by In-vitro drug release for 12 hrs. With the release of the 95.03% of drug from the formulation. By performing all the studies it was concluded that 10% HPMC same as 40% VMSG results showed that the selected gum exhibited good matrix forming properties in the In-vitro studies and could be able to control the release same as HPMC. As the concentration of polymer increased the release rate of the drug from formulation was decreased respectively. The DSC and FTIR studies reveals that there is no chemical interaction between the drug and excipients, and from XRD and SEM studies it was confirmed that polymer is amorphous in nature.

KEYWORDS: HPMC, VMSG.

1). INTRODUCTION

Matrix tablet is the type of controlled drug delivery system, which release the drug in continuous manner. Matrix is defined as a well mixed composite of one or more drug with gelling agent i.e. hydrophilic polymers. Which release the drug by both controlled and diffusion controlled mechanism.

Matrix systems are widely used for the purpose of sustained release. It is the release system which prolongs and controls the release of the drug that is dissolved or dispersed. By the sustained release method therapeutically effective concentration can be achieved in the systemic circulation over an extended period of time, thus achieving better compliance of patients. Numerous SR oral dosage forms such as membrane controlled system, matrices with water soluble/insoluble polymers or waxes and osmotic systems have been developed. Controlled and Sustained Release has both been used in inconsistent and confusing manner. Both represent separate delivery process. Sustained Release constitutes any dosage form that provides medication over an extended time or denotes that the system is able to provide some actual therapeutic control whether this is of a temporal nature, spatial nature or both. Sustained Release systems generally do not attain zero order type release and usually try to mimic zero order release by providing drug in a slow first order.

Sustained drug delivery system was aimed to release the medication in a prolonged rate to maintain plasma drug levels. The drugs having shorter life are suitable for the sustained drug delivery system. The main objective in designing sustained delivery system is to reduce dosing frequency and thereby increasing the action. The drug molecules shows better sustained release profile in matrix system by different mechanisms. The introduction of matrix tablet as a sustained release had made a new phase for the novel drug delivery system.[1]

Sustained release system implies to the pharmaceutical dosage form formulated for retardation of release of therapeutic agent such as its appearance in the systemic circulation was delayed or prolonged and its plasma profile was sustained in duration. The onset of pharmacological action was delayed and duration of therapeutic effect also delayed.[2]

Hydrophilic polymer matrix systems are widely used in oral controlled drug delivery because of their flexibility to obtain a desirable drug release profile, cost effectiveness and broad

regulatory acceptance. The purpose of controlled release systems is to maintain drug concentration in the blood o in the target tissues at desired value as long as possible.[3]

In the present study matrix tablet of Diclofenac sodium was prepared. The basic idea behind the development of such a system is to maintain a constant level of drug in the blood plasma in spite of the fact that the drug does not undergo disintegration. This type of system is quite useful where a sustained effect is required over a long period of time Diclofenac sodium is sodium2-[(2, 6-dichlorophenyl)-amino] phenyl acetate Diclofenac is an acidic non-steroidal anti-inflammatory drug (NSAID) with analgesic property. Diclofenac is used to trat pain, dysmenorrhea, ocular inflammation, osteoarthritis, rheumatoid arthritis, ankylosing spondylitis and actinic keratosis.[4]

2). MATERIAL AND METHOD

Isolation of gum from *Vigna Mungo* Seed

The crushed seeds of *vigna mungo* were boiled for 1 h, and kept aside for 2 h for the release of gum into water. The soaked seeds were taken and squeezed in a muslin bag to remove marc from the filtrate. Then, to the filtrate, equal quantity of absolute ethyl alcohol was added to precipitate the gum. The gum was separated by filtration. The marc was not discarded but it was sent for multiple extractions with decreasing quantity of extracting solvent, i.e., water with the increase of number of extractions. The isolation was continued until the material was free of gum. The separated gum was dried in hot air oven at temperature 40C. The dried gum was powdered and stored in airtight containers at room temperature.[6,7]

Material

Diclofenac sodium was a gift sample from kopran pharmaceutical limited, mumbai, India. The seeds of *Vigna Mungo* (Black gram) were purchased from the local market of Chikhli (Maharashtra). All other material and solvent obtained from commercial sources were of analytical grade.

Preparation of sustained release matrix tablets

Matrix tablets containing Diclofenac sodium were prepared by wet granulation technique using variable concentrations of *Vigna Mungo* seed gum and starch as filler. Different tablet formulations were prepared by wet granulation method. All the powders were passed through 60 mesh sieve. Required quantity of drug, and starch were mixed thoroughly. Then, polymer dissolve in granulating agent, water was added slowly with uniform mixing the get a wet

mass. The wet mass was passed through sieve no 10 to obtain wet granules. The granules were dried at 50ºC for 5 to 6 hrs in try dryer. The dried granules were passed through sieve.no.22, after blending with lubricants were compresses into tablet compression machine using tablet compression machine. Each tablet contained 50mg of Diclofenac sodium and other pharmaceutical ingredients as listed in table number 1.[6,7]

Table: 1 Formulation of Diclofenac Sodium Matrix Tablet

Formulation	Diclofenac Sodium	HPMC	VMSG gum	Starch	Magnesium Stearate (%)	Talc (%)	Total
F1	50	0	50	0	1	1	102
F2	50	0	40	10	1	1	102
F3	50	0	30	20	1	1	102
F4	50	0	20	30	1	1	102
F5	50	0	10	40	1	1	102
F6	50	10	0	40	1	1	102

3). PREFORMULATION STUDY

Preparation of standard calibration curve of Diclofenac Sodium

50 mg of diclofenac sodium was accurately weighed and transferred into 100 ml volumetric flask. It was dissolved and made up to the volume with phosphate buffer 6.8 to give stock solution containing 500µg/ml. from the standard stock solution, 10 ml solution was diluted with 100ml phosphate buffer 6.8(50µg/ml). Appropriate aliquots were taken into different volumetric flask and made up to 10 ml with phosphate buffer 6.8 so as to get ten different concentration (5,10,15,20,25,30,35,40,45&50µg/ml). The UV absorbance reading were noted at 276.7 nm using UV/ VISIBLE spectrophotometer (Shimadzu 1700 Japan). Phosphate buffer 6.8 was used as blank. The Beer- Lambert curve was drawn and correlation coefficients calculated.

Table: 2 Absorbance data for the calibration curve of diclofenac sodium at 276.7nm

SR, NO	CONCENTRATION	ABSORBANCE
1	5	0.3662
2	10	0.4266
3	15	0.6142
4	20	0.7874
5	25	0.9697
6	30	1.1858
7	35	1.3602
8	40	1.5276
9	45	1.7171
10	50	1.8893

In Preformulation studies, it was found that, the wavelength of diclofenac sodium by spectroscopy method at 276.7nm in phosphate buffer 6.8. This complies with BP standard thus indicating purity of obtained drug sample and plot of graph of absorbance V/S concentration between 5-50 µg/ml ranges. The Diclofenac sodium calibration curve is Fig no.3.

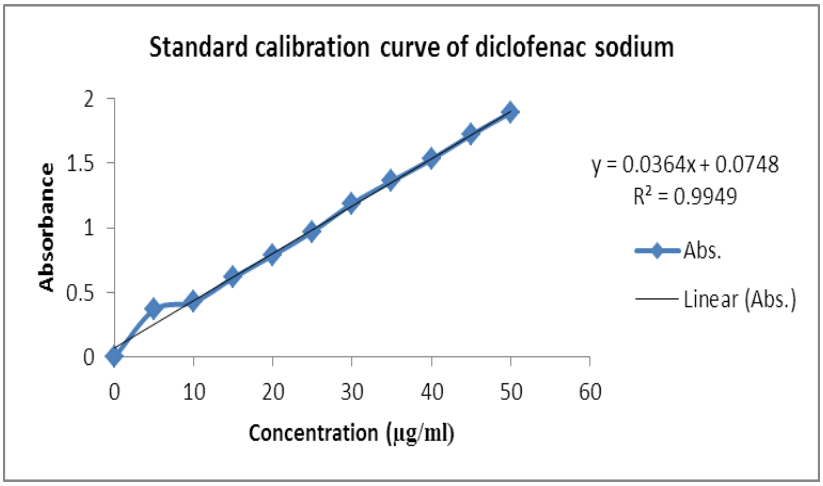

Fig.no 1: Standard calibration curve of diclofenac sodium

Loss on drying

The method adopted was that specified in the B.P 2004 for acacia. 1.0 g of the sample was transferred into each of several Petri dish and then dried in an oven at 105°C until a constant weight was obtained. The moisture content was then determined as the ratio of weight of moisture loss to weight of sample expressed as a percentage.

pH determination

pH was determined by shaking a 1%w/v dispersion of the sample in water for 5 min and the reading were noted by digital pH meter.

Angle of repose

The static angle of repose "θ" was measured according to the fixed funnel and free standing cone method. A funnel was clamped with its tip 2 cm above a graph paper placed on a flat horizontal surface. The powders were carefully poured through the funnel until the apex of the cone thus formed just reached the tip of the funnel. The mean diameters of the base of the powder cones were determined and the tangent of the angle of repose calculated using the equation,

Angle of repose = tanθ-1 [h/r]

Where θ = angle of repose , h =height of granules , r = radius of granules

Bulk density

Apparent bulk density was determined by placing drug in to a graduated cylinder and measuring the volume and weight as it is. Bulk density was determined by using following formula.

Procedure

The sample of powder mixture 1.5g was placed in 10 ml measuring cylinder. Volume occupied by the powder was noted down. The bulk density is measured by following formula

$$Density = \frac{Mass}{Volume}$$

Tapped density

Weighed sample of drug was transferred to a graduated cylinder and was tapped for a fixed time or for a fixed number of taps (100). The tapped density was determined by using the following formula.

$$Tapped\ Density = \frac{\text{Weight of powder taken}}{\text{Tapped volume}}$$

Hausner's ratio

Hausner's ratio is an indirect index of ease of measuring the powder flow. It was calculated by the following formula.

$$\text{Hausner's ratio} = \frac{\text{Tapped density}}{\text{Bulk density}}$$

Lower Hausner's ratio (<1.25) indicates better flow properties than higher ones (>1.25).

Compressibility index

Based on the apparent bulk density and the tapped density, the percentage compressibility of the powder mixture was determined by the following formula.[9]

$$\text{Compressibility index} = \frac{\text{Tapped density} - \text{Bulk density}}{\text{Tapped volume}} \times 100$$

Fourier Transform Infrared Spectroscopy (FTIR) study

The compatibility between drug and polymers were detected by IR spectra (Jasco FT/IR460Plus). The pellets were prepared on KBr- press (spectra lab). The spectra were recorded over the range of 4000 -2000- 400cm^{-1}.

Differential scanning Calorimetry (DSC) study

Thermograms were obtained by using a differential scanning calorimeter (DSC Q20 V24.4 Build 116, Japan) at a heating rate 10^{o} C/min over a temperature range of 0-300^{o} C. The sample was thermetically sealed in an aluminum crucible. Nitrogen gas was purged at the rate of 10 ml/min for maintaining inert atmospheres. DSC of diclofenac sodium, polymers and physical mixture were studied.

X-Ray Diffraction Studies (XRD)

The X-ray diffractogram of VMSG are shown in (fig .11). The bragg relection angle, 2θ, along with the inter planar spacing d, and the relative intensity of the peaks were calculated. The inter planer spacing has been calculated using Bragg's equation given as nλ= 2d sinθ, where θ is one half the angle read from the diffractogram. XRD pattern of the polymer has shown peaks with low intensity which confirms the amorphous nature of the polymer.

Scanning Electron Microscope (SEM)

The morphological features of the gum were studied with a JSM-5600 LV scanning electron microscope of JEOL, Tokyo, Japan. The dried sample was mounted on a metal stub and sputtered with gold in order to make the sample conductive, and the images were taken at an accelerating voltage of 10kV with magnifications of ×50, ×500, ×1000and ×1500. The samples providing most meaningful information for purposes of our analysis were obtained at ×50 and ×500 magnification.

Post – Compression Evaluation Of Diclofenac Sodium Matrix Tablets.

Thickness

The thickness of the tablets was determined by using vernier calipers. Five tablets were used, and average values were calculated. (Result Mentioned in **Table No. 9**).

Weight variation test

To study weight variation twenty tablets of the formulation were weighed using an Orion electronic balance and the test was performed according to the official method. Twenty

tablets were selected randomly from each batch and weighed individually to check for weight variation. (Result Mentioned in **Table No. 9**).

Hardness

Hardness indicates the ability of a tablet to withstand mechanical shocks while handling. The hardness of the tablets was determined using Rolex hardness tester. It is expressed in kg/cm2. Three tablets were randomly picked and hardness of the tablets was determined. (Result Mentioned in **Table No. 9**).

Friability test

The friability of tablets was determined using Roche Friabilator. It is expressed in percentage (%). Ten tablets were initially weighed (+F) and transferred into friabilator. The friabilator was operated at 25rpm for 4 minutes or run up to 100 revolutions. The tablets were weighed again (W). The % friability was then calculated by. (Result Mentioned in **Table No. 10**).

% Friability=(1=W/Wo)100

Where, Wo =weight of the tablet before test, W= weight of the tablet after test

% Friability of tablet less than 1% are considered acceptable.

Drug content

Five tablets were weighed individually and powdered. The powder equivalent to average weight of tablets was weighed and drug was extracted in acetone, the drug content was determined measuring the absorbance at 276.7nm after suitable dilution using a Shimadzu 1700 UV- Visible double beam spectrophotometer.. (Result Mentioned in **Table No. 10**)[10]

In –vitro dissolution studies

The in vitro dissolution study was carried out using six station dissolution rate test apparatus USP type II at 50 rpm. The dissolution medium consisted of 900 ml of phosphate buffer pH 6.8, maintained at $37^{o}C \pm 0.5^{o}C$. Aliquots of 5 ml were withdrawn every 10 min and an equivalent amount of fresh dissolution equilibrated. Aliquots withdrawn were filtered and analyzed at λmax276.7 nm spectrophotometrically.. (Result Mentioned in **Table No. 11**).[11]

4). RESULT

Phytochemical characterization of the gum

Table: 3 Phytochemical characterization of the gum

Test	Observation	Result
Molish test: 100mg of dried gum/mucilage powder +Molish's reagent +conc. H_2SO_4 on the side of test tube.	Violet color observed at the junction of the two layers.	Carbohydrate are present
Ruthenium test: take a small quantity of dried mucilage/gum powder, mount it on a slide with ruthenium red solution, and observe it under microscope.	Pink color observed	Mucilage present
Iodine test: 10 mg of mucilage / gum powder add 1ml 0.2 N iodine solution	No color observed in solution	Polysaccharide present
Enzyme test: dissolve dried mucilage /gum powder in20ml distilled water, add 0.5 ml of benzidine in alcohol.	No blue color produced	Enzyme absent
Fehling's test: mix 1 ml Fehling's A and 1ml Fehling's B boil for 1min. add equal volume of test solution. Heat in boiling water bath for 5-10 min.	First yellow and brick red ppt is observed	Reducing sugar is present
Mix equal amount of test solution and HCL. Heat this mix. Add a crystal of phloroglucinol	Red color appears	Pentose sugar present
Tollenstest: mix 2.5 ml of conc. HCL and 4ml 0.5% phoroglucinol. Add 1-2 ml test solution. Heat the mix.	Yellow to red color is appeared	Hexose sugar present

The preliminary phyto-chemical test were carried out and the result confirm the carbohydrate nature of the gum. Protein, alkaloids, glycoside are absent. (Table 3).

Physicochemical characterization of the gum

Solubility study of *Vigna Mungo* seed gum (VMSG)

The solubility studies were also carried out. The result indicate that the VMSG is insoluble in acetone and alcohol, dispersed well in water forming a colloidal dispersion.

Physico-chemical parameter of VMSG polymer

Table: 4 Physico-chemical parameter of VMSG polymer

1	Color	Yellow
2	Odor	Characteristics
3	Melting point	182^0c
4	Bulk density	0.561g/ml
5	Tapped density	0.750g/ml

6	Carr's index	3.82
7	Hausner ratio	1.336
8	Angle of repose	$32^0$56'
9	pH	6.8

The physical properties of the gum were also studies and the result indicates that VMSG is free flowing powder having a desirable viscosity.

Preformulation studies of Diclofenac Sodium

The Preformulation study of the drug was carried out by conducting various parameters viz. solubility, melting point and pH determination and spectral analysis.

- **Organoleptic properties**

The recording color and odor of diclofenac sodium was done by visual analysis, Diclofenac sodium- white color.

- **Solubility**

The solubility of pure drug in solvent was carried out and found to be soluble in water acetone, & insoluble in ether, chloroform, toluene.

- **Melting point**

Melting point of Diclofenac sodium was found to be 182^0c from this we concluded that the drug sample is pure.

. IR-Spectrum of VMSG

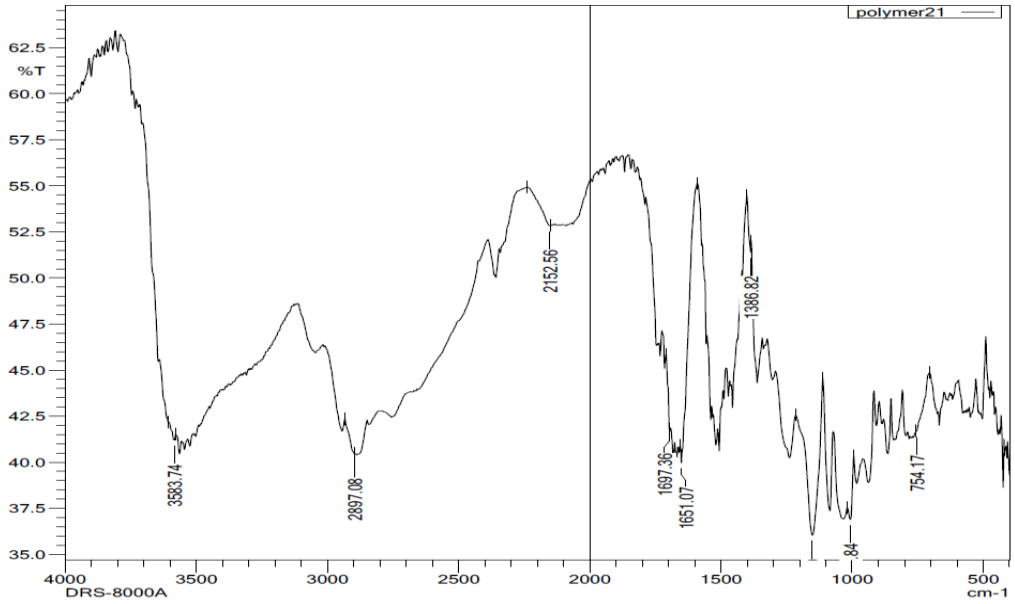

Fig. 2: (IR Spectrum of VMSG)

Table. 5: (characteristic Band of VMSG)

Function Group	Ranges
O-H Strechimg	3500.80
Aro- C-H Streching	3062.96
Aliphatic C-H Streching	2800.64
C=O stretching	1693.50
C-C Aro stretching	16.17

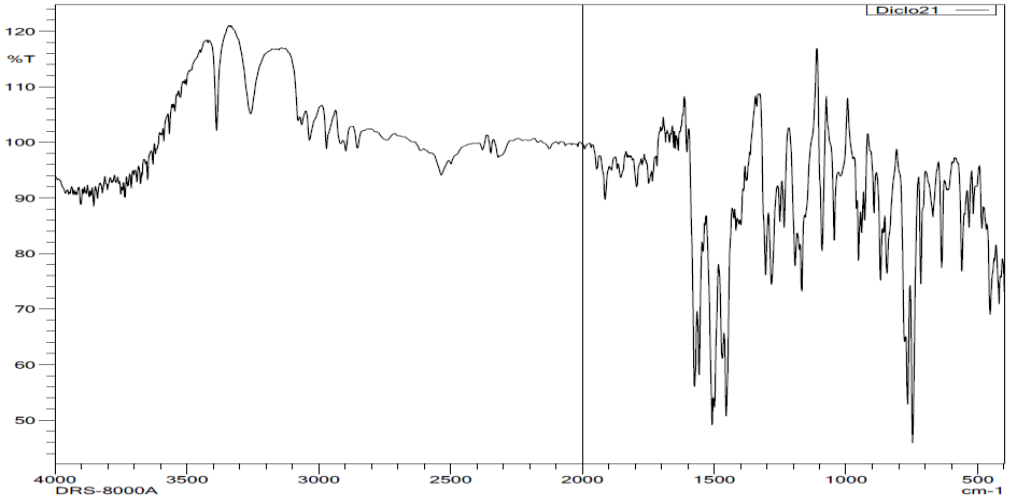

Fig. no: 3 IR-spectrum of diclofenac sodium

Table no.6: (Characteristics Band of Diclofenac Sodium)

Function Group	Ranges
N-H stretching	3500-3200
Aro-C-H stretching	3078.39
C-H aliphatic	2897
C-ClStreching	1280
C-N Streching	1044
Ester	1647.21
C-C out of plane	844

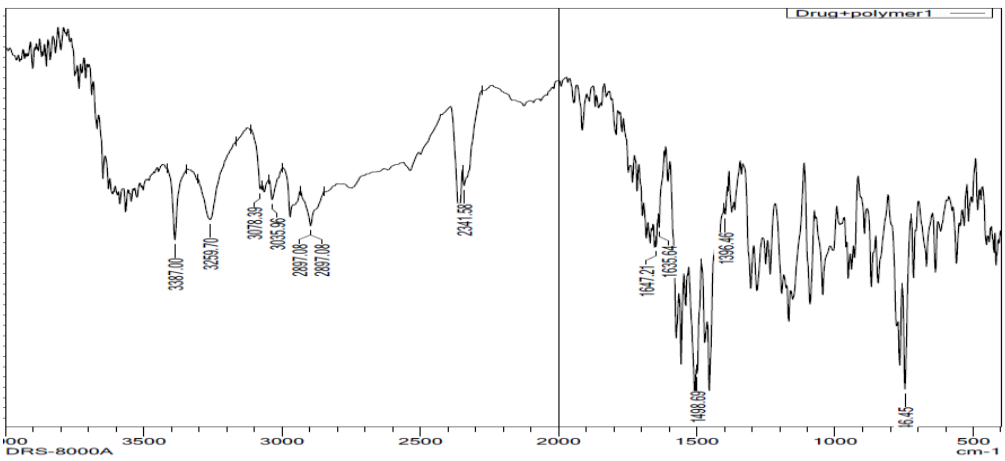

Fig. no.4: IR-Spectrum of VMSG+Diclofenac Sodium Mixture

Table no7: (Characteristics Spectra of VMSG+Diclofenac Sodium Mixture)

Functional group	Ranges
O-H stretching	3600
N-H stretching	3387
Ar C-H stretching	3078.39
Aliphatic C-H stretching	2897.08
C=O stretching	1647.21
C=C stretching	1498.69
C-O-O-C stretching	1200
C-N stretching	1040
C-Clstreching	1280

Table no.8: Density and related properties of diclofenac granules determined at different polymer concentration

Formula weight (%w/w)	Bulk density (gm/cm3)±S.D	Tapped density(gm/cm3)±S.D.	Carr's index (%)±S.D.	Hausners ratio(gm/cm3)±S.D.	Angle of repose (θ)±S.D.
F1	0.3402±0.01	0.3985±0.02	14.62±1.01	0.0583±0.00	24.02±1.16
F2	0.3201±001	0.4582±0.01	30.13±1	0.1381±0.00	23.47±1.43
F3	0.3551±0.01	0.4201±0.01	15.47±1.05	0.0650±0.00	22.70±1.77
F4	0.3885±0.01	0.4996±0.00	22.23±0.99	0.1111±0.09	23.32±1.78
F5	0.4852±0.01	0.5045±0.01	3.82±1	0.0193±0.22	24.50±1.77
F6	0.4750±0.00	0.5124±0.01	7.29±1.53	0.0374±0.00	25.45±1.76

Post compression evaluation of diclofenac sodium

Table no.9: Weight Variation. Thickness, Hardness

Formula weight (%w/w)	Weight variation ±S.D.	Thickness ±S.D.	Hardness (kg/cm3)±S.D.
1	100 ± 1.52	3.1 ± 0.2	5.0 ± 0.14
2	99 ± 1.00	3.0 ± 0.3	5.2 ± 0.15
3	98 ± 1.00	3.6 ± 0.5	6.8 ± 0.27
4	101 ± 1.00	3.2 ± 0.2	6.2 ± 0.12
5	100 ± 1.52	3.9 ± 0.3	6.9 ± 0.11
6	100 ± 1.52	3.8 ± 0.4	6.7± 0.25

Table no.10: Friability, Drug content,

Formulation binder weight (%w/w)	Friability (%) ±S.D.	Drug content (%) ±S.D.
1	1.00 ± 0.04	96.26±1.04
2	0.80 ± 0.06	98.58±1.01
3	0.76 ± 0.03	95.12±0.83
4	0.81 ±0.05	97.37±0.94
5	0.89 ± 0.02	98.15±0.93
6	0.92 ± 0.04	99.25±0.92

Table no. 11: % Drug release data for diclofenac sodium

Time (hrs)	F1±S.D.	F2±S.D.	F3±S.D.	F4±S.D.	F5±S.D.	F6±S.D.
0	0.97±0.01	1.06±0.008	0.86±0.005	1.01±1.00	1.04±1.11	1±1.00
0.25	2.08±1.0	1.8±1.06	2.02±1.01	2.2±0.96	1.4±1.10	1.5±0.10
0.50	4.1±1.5	3.87±0.24	4.02±0.98	4.2±0.88	3.6±0.95	3.2±0.92
1	8.2±0.85	8.1±0.51	8.2±0.85	9±1.00	8.3±1.00	8.1±1.21
2	15.4±1.52	17.3±1.10	16.1±1.49	15.4±1.30	16.6±1.06	15.1±1.05
3	25.13±0.71	27.3±1.10	25.1±0.72	23.1±1.76	26.7±1.46	25.30±1.11
4	43.14±1.04	49.3±0.98	42.1±1.20	45.36±1.11	47.3±0.86	47±1.00
5	52.16±1.00	56.1±1.15	53.16±1.05	54.16±1.10	55.6±1.36	45.50±0.85
6	59.13±0.93	62.18±1.21	60.13±1.17	60.14±0.56	61.61±1.00	61.20±1.00
7	65.43±1.00	68.42±1.64	66.4±0.64	66.7±0.76	67.7±1.25	67.01±0.88
8	69.73±1.64	72.7±1.21	68.4±1.63	71.4±1.56	72.74±1.26	71.72±1.18
9	73.75±1.50	78.03±0.81	75.3±0.89	70.5±1.00	75.6±0.80	74.12±1.27
10	80.75±1.47	83.01±0.98	80.1±1.25	81.1±1.20	82.3±1.00	80.03±1.11
11	84.7±0.90	88.3±0.10	85.4±1.25	85.6±1.23	87±1.00	88±1.00
12	88.73±1.18	95.3±0.11	87.34±1.24	90.98±0.67	94.2±1.06	92.45±1.00

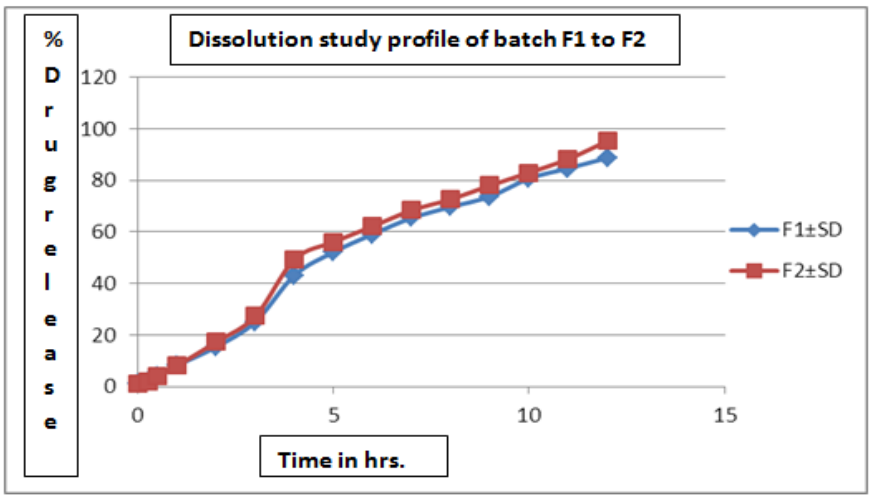

Fig. no.5: % Drug Release of F1 to F2

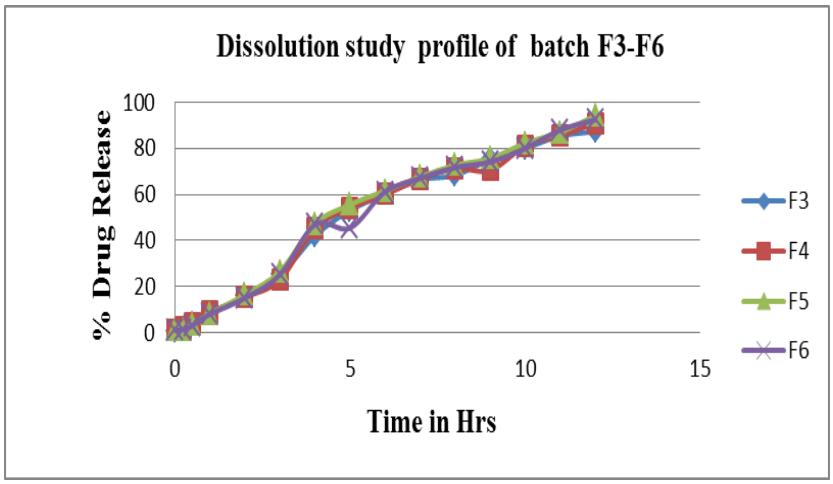

Fig. no. 6: % Drug Release of batch F3 to F6

DSC Spectroscopy

The DSC thermogram for *Vigna Mungo* is shown in figure below and corresponding parameters are tabulated as well. The DSC shows that VMSG has onset occurred at 67.39^{0}C, while the peak temp was at 85.43^{0}C. The onset, peak and conclusion temperatures of base transition were observed to be moderate. The knowledge of glass transition Tg is essential in production processes and storage.

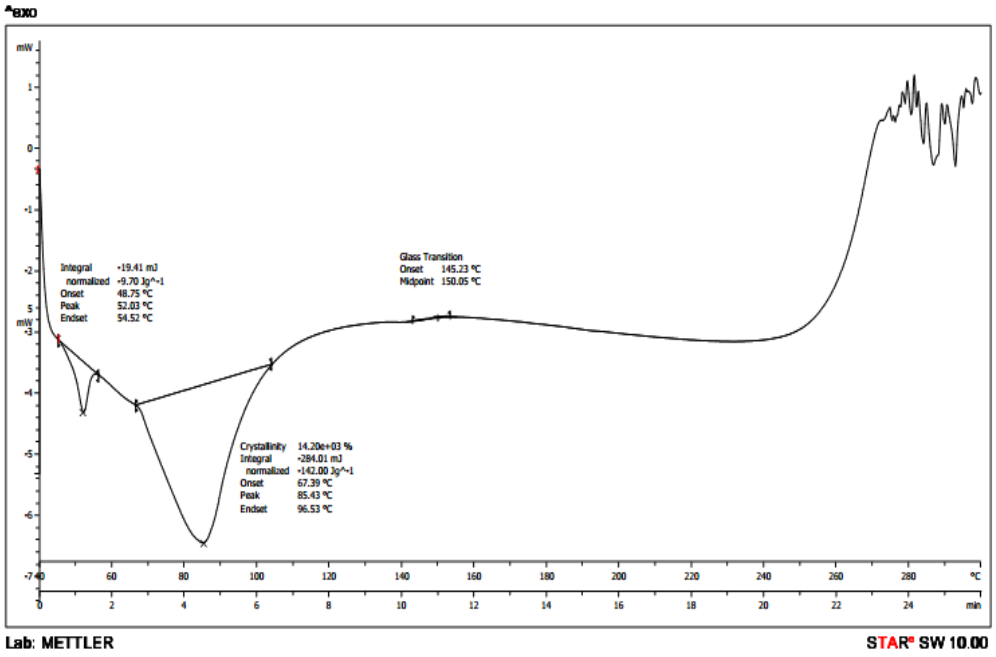

Fig.no.7: DSC Thermogram of VMSG+Diclofenac

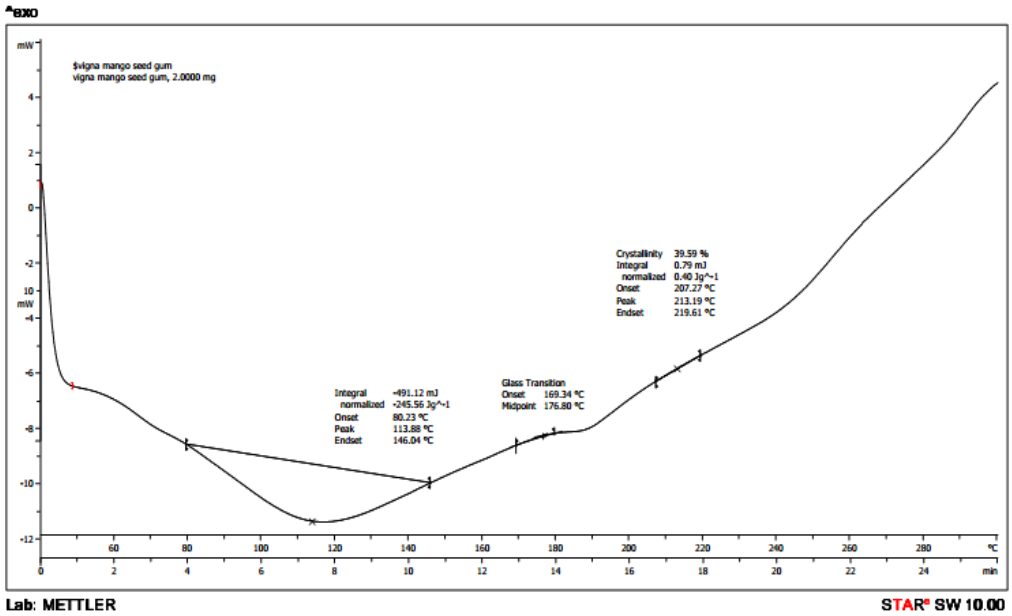

Fig.no.8:-DSC Thermogram of VMSG

Scanning Electron Microscopy (SEM)

The morphological features of the gum were studied with a JSM-5600 LV scanning electron microscope of JEOL, Tokyo, Japan. The dried sample was mounted on a metal stub and sputtered with gold in order to make the sample conductive, and the images were taken at an accelerating voltage of 10kV with magnifications of ×50, ×500, ×1000 and ×1500. The samples providing most meaningful information for purposes of our analysis were obtained at ×50 and ×500 magnification.

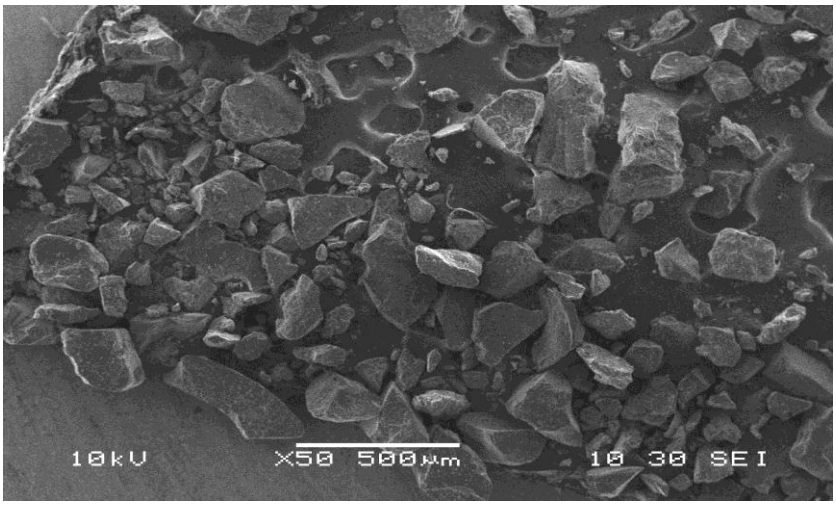

Fig. no.9: SEM of*VMSG*at×50

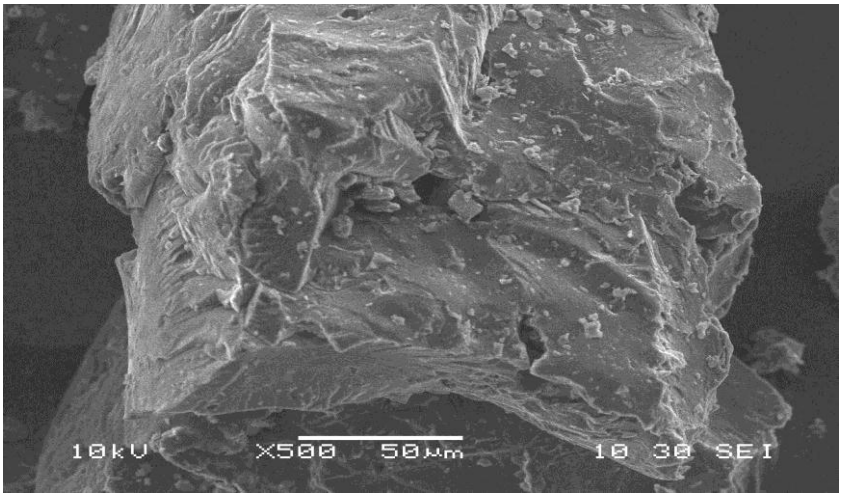

Fig. no. 10: SEM of*VMSG*at ×500

CONCLUSION

From the above SEM result it is observed that the *Vigna Mungo* husk powder sample is amorphous in nature. Physically it looks like the flakes, which have the irregular shape. The number of flakes are aggregated together to form big flake which varies in particle size.

XRD studies

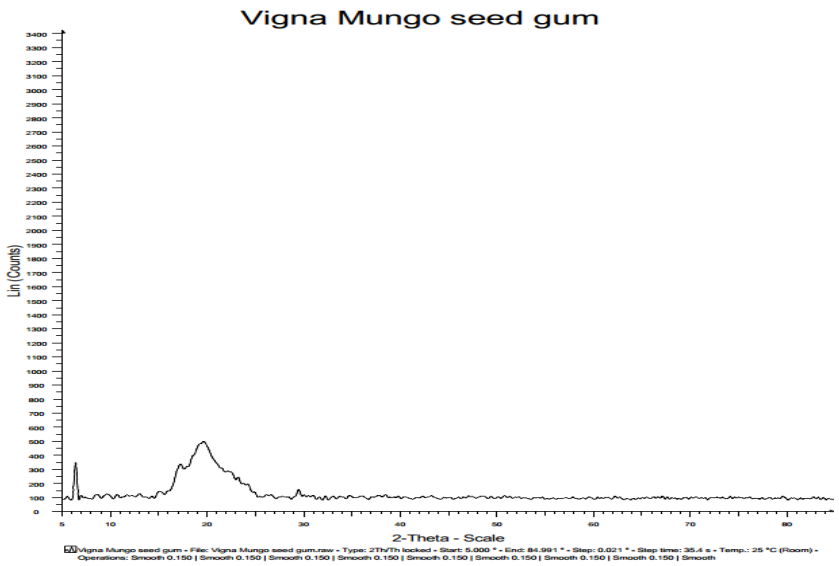

Fig. no. 11: X-ray diffraction of *VMSG.*

Vigna Mungo seed gum.raw - Type: 2Th/Th locked –

Start: 5.000 °

End: 84.991 °

Step: 0.021 °

Step time: 35.4 s

Temp.: 25 °C (Room Temp)

The X-ray diffraction pattern of *VMSG*is shown in Figure 13.

The XRD studies were also performed to reveal the physical nature of compound.

The XRD study indicates that the compound is amorphous in nature.

5). CONCLUSION

The objective of the study is to isolate pure gum from *Vigna Mungo* seed gum. The pure gum was used in formulation as a matrix forming agent to known its sustain release efficacy. Different concentration of gum was used 1% gum concentration could not control the release of drug due to less binding capacity and less polymer concentration, as the concentration increased the binding capacity of the gum was increased and effectively controlled the drug release.

The efficiency of VMSG as matrix forming agent was compared with established polymers like Hydroxypropylmethylcellulose (HPMC). Formulation of 10% HPMC, same as 40%

VMSG, results showed that the selected gum exhibited good matrix forming properties in the *In-vitro* studies and could able to control the release same as HPMC.

The studied natural gum of VMSG showed good matrix forming properties in the formulations prepared with diclofenac sodium as model drug. The food grade status of the gum, abundant availability and its effective Sustain release capability in the present study suggests that the gum has lot of potential to replace the existing conventional matrix former. The use of this gum certainly decrease the overall cost of the formulation development as the gum is a cheaper substitute to many existing excipients and hence can be a better alternative.

The result of the present study indicate that *Vigna Mungo* yields a substantial amount of gum from it's seeds (about 18%) and hence can be established as an alternative source of gums.

The present study shows the effect of *Vigna Mungo* as matrix forming in the formulation development of diclofenac tablets in comparison with the standard HPMC from the result, it is concluded that.

Vigna Mungo has a same matrix forming capacity, as HPMC. The gum used is having matrix forming capacity, its disintegration time falls within the standard limits, the mechanical properties of the tablets were assessed using the crushing strength and friability of the tablet.

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